



Attorney Docket No. 2000.83

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of:
Nguyen, et al

Art Unit: 1771

Serial No. 10/005,846

Examiner: Victor S. Chang

Filed: December 3, 2001

For: DIFFUSION MEMBRANE

APPEAL BRIEF

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This Appeal Brief is filed in reply to the Office Action
mailed November 25, 2003.

The fees required under Sections 1.17(b) and 1.17(c) are paid
pursuant to instructions on the accompanying Fee Transmittal Sheet
which is provided in duplicate.

03/02/2004 AWONDAF1 00000041 082447 10005846

01 FC:1402 330.00 DA

This Brief is transmitted in triplicate.

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient
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22313-1450, on February 24, 2004.

03/01/2004 HVUONG1 00000115-082447-10005846

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PTO/SB/17 (10-03)
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FEE TRANSMITTAL for FY 2004

Effective 10/01/2003. Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$) 330.00

Complete if Known

Application Number	10/005,846
Filing Date	December 3, 2001
First Named Inventor	Khuy V. Nguyen
Examiner Name	V. Chang
Art Unit	1771
Attorney Docket No.	2000.83

METHOD OF PAYMENT (check all that apply)

☐ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None

☒ Deposit Account:
Deposit Account Number: 08-2447
Deposit Account Name: Robert H. Hammer III, P.C.

The Director is authorized to: (check all that apply)

☒ Charge fee(s) indicated below ☒ Credit any overpayments
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FEE CALCULATION

1. BASIC FILING FEE

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1001	770	2001	385	Utility filing fee	
1002	340	2002	170	Design filing fee	
1003	530	2003	265	Plant filing fee	
1004	770	2004	385	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	
SUBTOTAL (1) (\$)					

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

Total Claims: -20** = X =
Independent Claims: -3** = X =
Multiple Dependent: =

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1202	18	2202	9	Claims in excess of 20	
1201	86	2201	43	Independent claims in excess of 3	
1203	290	2203	145	Multiple dependent claim, if not paid	
1204	86	2204	43	** Reissue independent claims over original patent	
1205	18	2205	9	** Reissue claims in excess of 20 and over original patent	
SUBTOTAL (2) (\$)					

**or number previously paid, if greater; For Reissues, see above

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet	
1053	130	1053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for ex parte reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	
1252	420	2252	210	Extension for reply within second month	
1253	950	2253	475	Extension for reply within third month	
1254	1,480	2254	740	Extension for reply within fourth month	
1255	2,010	2255	1,005	Extension for reply within fifth month	
1401	330	2401	165	Notice of Appeal	
1402	330	2402	165	Filing brief in support of an appeal	330.00
1403	290	2403	145	Request for oral hearing	
1451	1,510	1451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive - unavoidable	
1453	1,330	2453	665	Petition to revive - unintentional	
1501	1,330	2501	665	Utility issue fee (or reissue)	
1502	480	2502	240	Design issue fee	
1503	640	2503	320	Plant issue fee	
1460	130	1460	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	770	2809	385	Filing a submission after final rejection (37 CFR 1.129(a))	
1810	770	2810	385	For each additional invention to be examined (37 CFR 1.129(b))	
1801	770	2801	385	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	

Other fee (specify) _____

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) (\$) 330.00

SUBMITTED BY

Name (Print/Type)	Robert H. Hammer III	Registration No. (Attorney/Agent)	31,764	Telephone	704-927-0400
Signature		Date	February 24, 2004		

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

This collection of information is required by 37 CFR 1.17 and 1.27. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS.
SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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1. REAL PARTY IN INTEREST

Celgard Inc., the assignee of record in the instant application, is the real party in interest.

2. RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

3. STATUS OF THE CLAIMS

Claims 1-11 are the subject of this appeal. Claims 1-11 are rejected under 35 U.S.C. 103(a).

4. STATUS OF AMENDMENTS

No amendment has been made after the Final Rejection.

5. SUMMARY OF THE INVENTION

The following is a concise explanation of the invention defined in the claims. The instant invention, as recited in Claim 1, teaches a method of improving the mechanical strength of a membrane comprising the step of: providing a microporous sheet comprising a blend of an aliphatic polyolefin and a thermoplastic olefin elastomer selected from the group of ethylene-propylene rubbers, ethylene-propylene-diene terpolymer rubbers, and

combinations thereof with the elastomer comprising less than 10 percent by blend weight.

Furthermore, the instant invention, as recited in Claim 8, teaches a method of improving the mechanical strength of a membrane comprising the step of: providing a microporous sheet having a Gurley air permeability less than 35 seconds/10cc comprising a blend of an aliphatic polyolefin selected from the group consisting of polyethylene, polypropylene, copolymers thereof, and blends thereof, and a thermoplastic olefin elastomer being selected from the group consisting of ethylene-propylene rubbers, ethylene-propylene-diene terpolymer rubbers, and combinations thereof, with the elastomer comprising 3 to 7 percent by blend weight.

In addition, the instant invention, as recited in Claim 9, discloses a diffusion membrane comprising: a microporous sheet comprising a blend of an aliphatic polyolefin and a thermoplastic olefin elastomer, the elastomer comprising less than 10 percent by blend weight, the polyolefin being selected from the group consisting of polyethylene, polypropylene, copolymers thereof, and blends thereof, the thermoplastic olefin elastomer being selected from the group consisting of ethylene-propylene rubbers, ethylene-propylene-diene terpolymer rubbers, and combinations thereof.

6. ISSUES

The first issue is whether Claims 1-7 are obvious under 35 U.S.C. 103(a) over Applicant's admitted prior art in view of U.S. Patent No. 5,938,874 ("Palomo").

The second issue is whether Claim 8 is obvious under 35 U.S.C. 103(a) over Applicant's admitted prior art in view of U.S. Patent No. 5,938,874 ("Palomo").

The third issue is whether Claims 9-11 are obvious under 35 U.S.C. 103(a) over Applicant's admitted prior art in view of U.S. Patent No. 5,938,874 ("Palomo").

7. GROUPING OF THE CLAIMS

Claims 1-7 stand together as a group. Claim 8 stands individually as a group. Claims 9-11 stand together as a group.

8. ARGUMENT

Claims 1-7, 8, and 9-11, for the reasons explained hereinafter, are non-obvious under 35 U.S.C. 103(a) over Applicant's admitted prior art in view of U.S. Patent No. 5,938,874 ("Palomo").

Thus, the above-mentioned 103 rejection is improper, and it must be removed. The errors, made by the Examiner, are discussed after a discussion of the invention and the cited references.

a. THE INVENTION

The instant invention, as stated above, teaches a method for improving the mechanical strength of a microporous membrane, as recited in Claims 1 and 8; furthermore, the instant invention discloses a mechanically strengthened microporous membrane, as recited in Claim 9.

The method of improving the mechanical strength of a microporous membrane, as described in Claims 1 and 8, includes providing a microporous sheet that comprises a blend of an aliphatic polyolefin and a thermoplastic olefin elastomer, as shown in Table I. The thermoplastic olefin elastomer, as described in Claim 1, is selected from the group of consisting of ethylene-propylene rubbers ("EPR"), ethylene-propylene-diene terpolymer rubbers ("EPDM"), and combinations thereof, as shown in Table II. Furthermore, the thermoplastic olefin elastomer, as described in Claim 1, shown in Tables I and II, comprises less than 10 percent by blend weight while the thermoplastic olefin elastomer, as described in Claim 8, shown in Table I, and II, comprises 3 to 7 percent by blend weight.

Table I

Element 1 of the Blend	Element 2 of the Blend	Percentage by Blend Weight of Element 2 According to Claim 1	Percentage by Blend Weight of Element 2 According to Claim 8
aliphatic polyolefin	thermoplastic olefin elastomer	Less than 10%	3% to 7%

Table II

Thermoplastic Olefin Elastomer	Percentage by Blend Weight According to Claim 1	Percentage by Blend Weight According to Claim 8
EPR	Less than 10%	3% to 7%
EPDM	Less than 10%	3% to 7%
Combinations of EPR and EPDM	Less than 10%	3% to 7%

The mechanically strengthened microporous membrane, as described in Claim 9, shown in Tables III, IV, and V, includes a microporous sheet comprising a blend of an aliphatic polyolefin and a thermoplastic olefin elastomer, the elastomer comprising less than 10 percent by blend weight, the polyolefin being selected from the group consisting of polyethylene("PE"), polypropylene ("PP"), copolymers thereof, and blends thereof, the thermoplastic olefin elastomer being selected from the group consisting of ethylene-

propylene rubbers ("EPR"), ethylene-propylene-diene terpolymer rubbers ("EPDM"), and combinations thereof.

Table III

Element 1 of the Blend	Element 2 of the Blend	Percentage by Blend Weight of Element 2 According to Claim 9
aliphatic polyolefin	thermoplastic olefin elastomer	Less than 10%

Table IV

Thermoplastic Olefin Elastomer	Percentage by Blend Weight According to Claim 9
EPR	Less than 10%
EPDM	Less than 10%
Combinations of EPR and EPDM	Less than 10%

Table V

Aliphatic Polyolefin
PE
PP
Copolymer of PE or PP
Blends of PE and PP

Although the Applicant's admitted prior art discloses that "microporous membranes are typically made of polyolefins, such as polypropylene and polyethylene," (Specification, Page 3, lines 1-2), none of the Applicant's admitted prior art references teaches or suggests how one may improve the mechanical strength of a microporous membrane; specifically, none of the Applicant's prior art references mentions anything regarding the optimum amount of thermoplastic olefin elastomer, less than 10 percent by blend weight, as required by the instant invention, to improve the mechanical strength of a microporous membrane without interfering with its porosity.

The unexpected results achieved by the instant invention, i.e. improving the mechanical strength of a microporous membrane without interfering with its porosity, is shown in table 1 on page 8 of the instant application, shown hereinbelow as Table VI.

Table VI

EXAMPLE	Blend % Elastomer	Thickness mil	Tensile (TS) kg/cm ²	Puncture (PS) g/mil	Gurley sec/10cc
1 (PE+EPDM)	0	0.56	928	293	NA
	5	0.61	1184	329	NA
	10	0.45	1250	378	NA
2 (PE+EPDM)	0	0.44	1173	373	22
	5	0.48	1837	468	23
	10	0.40	1828	510	29
3 (PP+EPDM)	0	0.84	972	275	NA
	5	0.84	1049	310	NA
	10	0.60	1120	352	NA
4 (PP+EPDM)	0	0.75	1446	353	19
	5	0.69	1580	426	22
	10	0.49	1669	494	123
5 (PP+EPR)	0	0.83	1040	311	NA
	5	0.70	1137	350	NA
	10	0.59	1420	408	NA
6 (PP+EPR)	0	0.75	--	386	26
	5	0.65	--	482	20
	10	0.59	--	462	68
7 (PE+EPDM)	0	0.88	--	199	NA
	5	0.86	--	263	NA
	10	0.88	--	299	NA
8 (PE+EPDM)	0	0.74	--	288	25
	5	0.70	--	327	32
	10	0.70	--	355	88

Referring to Table VI, examples 1, 3, 5, and 7 are non-porous, precursor (i.e. before stretching to induce porosity) films. (Specification, Page 6, Lines 14-15). Referring to Table VI, examples 1, 3, 5, and 7, the change in the weight of the elastomer, measured by percentage of the blend weight, does not interfere with the porosity of the membrane, measured in Gurley, because these membranes are non-porous. However, referring to Table VI, examples 2, 4, 6, and 8 are microporous membranes. (Specification, Page 6,

Lines 15-16). As shown in Table VI, examples 2, 4, 6, and 8, the change in the weight of the elastomer, measured by percentage of the blend weight, dramatically decreases the porosity of these microporous membranes, i.e. higher Gurley. Specifically, the trend in examples 2, 4, 6, and 8 indicate that while the mechanical strength is increased repeatedly when weight of the elastomer, measured by percentage of the blend weight, is increased, i.e. from 0% to 5% or from 5% to 10%, the porosity is, conversely, decreased repeatedly, i.e. higher Gurley. The unexpected results of the instant invention becomes evident when one examines the rate at which the porosity is being decreased. Specifically, in examples 2, 4, 6, and 8, porosity is decreased at much higher rates when the percentage by blend weight of elastomer is increased from 5% to 10% vis-à-vis 0% to 5%, as shown in Table VII.

Table VII

Example	Difference between Gurley at 5% Elastomer and 0% Elastomer (Measured in Gurley)	Difference between Gurley at 10% Elastomer and 5% Elastomer (Measured in Gurley)
2 (PE + EPDM)	23-22=1	29-23= 6
4 (PP + EPDM)	22-19=3	123-22=101
6 (PP + EPR)	20-26= -6	68-20=48
8 (PE + EPDM)	32-25=7	88-32=56

b. CITED REFERENCES

Palomo only mentions that "microporous film is preferably flexible and resilient, and examples of suitable materials that can be used to make microporous film include polyolefins, thermoplastic elastomers, thermoset elastomers, polyurethanes, polyethylenes, polypropylenes or blends of these polymers, as shown in Table VIII." (Column 4, lines 29-35).

However, Palomo fails to disclose how to improve the mechanical strength of a microporous membrane without interfering with its porosity. Specifically, Palomo fails to mention anything about the optimum amount of thermoplastic olefin elastomer, less than 10 percent by blend weight, as required by the instant invention, to improve the mechanical strength of a microporous membrane without interfering with its porosity. Furthermore, Palomo fails to disclose any working example where the mechanical strength of a microporous membrane has been improved without interfering with its porosity.

"Palomo discloses a medical gown, which at least a portion thereof, is made from an effective liquid and viral barrier material, which is breathable. The barrier material includes a support layer and a film layer adhesively laminated to the support

layer." (Column 1, lines 54-58). "The support layer provides strength, durability, and wicking." (Column 6, lines 18-20). The film layer is a microporous film structure and the support layer is capable of absorbing or wicking liquids." (Column 1, line 60-61).

Table VIII

Suitable Materials to Make Microporous Films According to Palomo
Polyolefins
Thermoplastic Elastomers
Thermoset Elastomers
Polyurethanes
Polyethylenes ("PE")
Polypropylenes ("PP")
Blends of Polyolefins, Thermoplastic Elastomers, Thermoset Elastomers, Polyurethanes, Polyethylenes, or Polypropylenes

c. DISCUSSION OF THE EXAMINER'S ERROR

Claims 1-7, 8, and 9-11 are non-obvious under 35 U.S.C. 103(a) for the reasons stated hereinafter.

With regard to first issue, Claims 1-7 are non-obvious under 35 U.S.C. 103(a).

First, with regard to Claim 1, the Examiner has failed to show a *prima facie* case of obviousness.

To reject claims in an application under section 103, an examiner must show a *prima facie* case of obviousness. *In re Deuel*, 51 F.3d 1552, 1557 (Fed. Cir. 1995). Furthermore, all words in a claim must be considered in judging the patentability of that claim against prior art. *In re Wilson*, 424 F.2d 1382, 1385 (CCPA 1970). In addition, to establish a *prima facie* case of obviousness, the following three basic elements must be met: (1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings; (2) the prior art reference or references when combined must teach or suggest all the claim limitations; **and** (3) there must be a reasonable expectation of success. MPEP § 2143. Finally, if an independent claim is non-obvious under 35 U.S.C. 103, then any claim depending therefrom is non-obvious. *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988).

With regard to Claim 1, the instant invention, as mentioned hereinabove, requires an optimum amount of thermoplastic olefin elastomer, less than 10 percent by blend weight. The optimum amount of thermoplastic olefin elastomer is important to the

instant invention because it improves the mechanical strength of the microporous membrane without interfering with its porosity.

However, cited references when combined, as stated hereinabove, fail to mention anything about the optimum amount of thermoplastic olefin elastomer, less than 10 percent by blend weight, as required by the instant invention, to improve the mechanical strength of a microporous membrane without interfering with its porosity. The instant application, as stated above, does not state, suggest, or imply that a person skilled in the art knows how to improve the mechanical strength of a microporous membrane without interfering with its porosity. The instant application simply discloses that "microporous membranes are typically made of polyolefins, such as polypropylene and polyethylene." (Page 3 of the application, lines 1-2). Furthermore, neither any of the Applicant's admitted prior art references, nor Palomo mentions anything regarding the optimum amount of thermoplastic olefin elastomer, less than 10 percent by blend weight, to improve the mechanical strength of a microporous membrane without interfering with its porosity. In addition, a skilled person also lacks such knowledge. The lack of such knowledge by a skilled person can be inferred from the fact that had a skilled person possessed such knowledge; then, Palomo or any of the Applicant's admitted prior art references would have utilized such knowledge to improve the

mechanical strength of a microporous membrane. Therefore, the cited references, when combined together, fail to teach or suggest all the claim limitations of the instant invention.

Furthermore, with regard to Claim 1, there is no suggestion or motivation in the cited references to modify their teachings to utilize the optimum amount of thermoplastic olefin elastomer, less than 10 percent by blend weight as required by the instant invention, to improve the mechanical strength of a microporous membrane without interfering with its porosity.

There is no suggestion or motivation because Palomo only discloses a list suitable materials, as shown in Table VIII, that can be used to make a microporous film, which is flexible and resilient. Furthermore, Palomo fails to disclose how to improve the mechanical strength of a microporous membrane without interfering with its porosity. Specifically, Palomo fails to mention anything about the optimum amount of thermoplastic olefin elastomer, less than 10 percent by blend weight, as required by the instant invention, to improve the mechanical strength of a microporous membrane without interfering with its porosity. Furthermore, Palomo fails to disclose any working example where the mechanical strength of a microporous membrane has been improved without interfering with its porosity. However, similar to *Ex*

parte Levengood, 28 USPQ 2D 1300 (Bd. Pat. App. & Inter., 1993), where the suggestion for examiner's combination improperly stemmed from the applicant's disclosure, the suggestion for Examiner's modification of the prior art, with regard to the instant application, also stems from the Applicant's disclosure in the instant application. In addition, not only does Palomo fail to mention any thing about the optimum amount of elastomer necessary to maintain the porosity of the microporous membrane while improving its mechanical strength, as required by the instant invention, but Palomo also teaches away from it. According to Palomo, "the barrier material includes a support layer and a film layer adhesively laminated to the support layer, and the support layer provides strength, durability, and wicking." (Column 1, lines 54-58; Column 6, lines 18-20). Thus, a person skilled in the art would have been motivated to employ a support layer similar to Palomo as the means to enhance the mechanical strength of the microporous membrane. Therefore, there is no suggestion or motivation in the cited references to modify their teachings to utilize the optimum amount of thermoplastic olefin elastomer, less than 10 percent by blend weight as required by the instant invention, to improve the mechanical strength of a microporous membrane without interfering with its porosity.

With regard to Claim 1, the first two requirements to establish a *prima facie* case of obviousness have not been met; therefore, the Examiner has failed to establish a *prima facie* case of obviousness.

Second, with regard to Claim 1, assuming *arguendo*, a *prima facie* case of obviousness has been established, the Applicant can overcome the *prima facie* case of obviousness by showing unexpected results, i.e. improved mechanical strength while maintaining porosity of the microporous membrane when the amount of elastomer is in the critical range of 0-10 percent by blend weight.

To overcome a *prima facie* case of obviousness by showing improved performance in a range that is within or overlaps with a range disclosed in the prior art, the applicant must "show that the claimed range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range. *In re Woodruff*, 919 F.2d 1575, 1578 (Fed. Cir. 1990). When an applicant demonstrates substantially improved results, and states that the results were unexpected, this should suffice to establish unexpected results in the absence of evidence to the contrary. *In re Soni*, 54 F. 3d 746 (Fed. Cir. 1995).

The instant invention achieves unexpected results, i.e. improving the mechanical strength of a microporous membrane while maintaining its porosity when the amount of elastomer is in the critical range of 0-10 percent by blend weight. As shown in Table VI, examples 2, 4, 6, and 8, the change in the weight of the elastomer, measured by percentage of the blend weight, dramatically decreases the porosity of these microporous membranes, i.e. higher Gurley. Specifically, the trend in examples 2, 4, 6, and 8 indicate that while the mechanical strength is increased repeatedly when weight of the elastomer, measured by percentage of the blend weight, is increased, i.e. from 0% to 5% or from 5% to 10%, the porosity is, conversely, decreased repeatedly, i.e. higher Gurley. The significance of the amount of elastomer in the range of 0-10 percent by blend weight becomes evident when one examines the rate at which the porosity is being decreased. Specifically, in examples 2, 4, 6, and 8, porosity is decreased at much higher rates when the percentage by blend weight of elastomer is increased from 5% to 10% vis-à-vis 0% to 5%, as shown in Table VII. Therefore, the instant invention achieves unexpected result, i.e. improving the mechanical strength of a microporous membrane while maintaining its porosity when the amount of elastomer is in the critical range of 0-10 percent by blend weight.

Similar to *In Re Soni*, 54 F. 3d 746 (Fed. Cir. 1995), where the patent application contained data showing that the claimed composition exhibited unexpected improved properties, the instant application, as stated above, contains data, discussed hereinabove, showing that the instant invention exhibits unexpected improved properties, i.e. improving the mechanical strength of a microporous membrane while maintaining its porosity when the amount of elastomer is in the critical range of 0-10 percent by blend weight.

Therefore, assuming *arguendo*, a *prima facie* case of obviousness has been established, the Applicant has overcome the *prima facie* case of obviousness by showing unexpected results, i.e. improved mechanical strength while maintaining porosity of the microporous membrane when the amount of elastomer is in the critical range of 0-10 percent by blend weight.

Third, with regard to Claim 1, the examiner is in error for stating that the amount of elastomer used in the blend is either inherently disclosed by Palomo or an obvious optimization to one skilled in the art motivated by the desire to obtain optimal required film flexibility and resiliency with suitable microporous property.

In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art. *Ex Parte Skinner*, 2 U.S.P.Q. 2d 1461, 1464 (BOPA 1990).

The Examiner has failed to provide a basis in fact and/or technical reasoning to reasonably support the determination that the amount of elastomer used in the blend is inherently disclosed by Palomo. Therefore, similar to *Ex Parte Skinner*, the Examiner does not have sufficient basis to support his rejection.

Furthermore, contrary to the Examiner's assertion that the determination of the amount of elastomer used in the blend is an obvious optimization to one skilled in the art, such determination, in fact, requires an undue amount of experimentation considering the vast number of possible combinations. According to Palomo, examples of suitable materials that can be used to make microporous film include polyolefins, thermoplastic elastomers, thermoset elastomers, polyurethanes, polyethylenes, polypropylenes or blends of these polymers, as shown in Table VIII; therefore, considering only suitable materials that can be used to make microporous membrane, there are about 64 different possible combinations. Furthermore, if one considers different possible amounts of each

material, then, the possible combinations can reach millions. Therefore, one must perform an undue amount of experimentation to determine that the critical amount of elastomer used in the blend is in the critical range of 0-10 percent by blend weight, as required by the instant invention, to improve mechanical strength of a microporous membrane while maintaining its porosity. Therefore the examiner is in error to assert that the determination of the critical amount of elastomer used in the blend is an obvious optimization to one skilled in the art. Thus, the Examiner does not have sufficient basis to support his rejection.

Therefore, Claim 1 is non-obvious under 35 U.S.C. 103(a). Furthermore, Claims 2-7 are dependant from Claim 1; thus, Claims 2-7 are non-obvious under 35 U.S.C. 103(a).

With regard to the second issue, Claim 8 is non-obvious under 35 U.S.C. 103(a) for the reasons stated hereinbelow.

Claim 8 is further limited in scope than Claim 1; according to Claim 8, the required optimum amount of thermoplastic olefin elastomer is between 3 to 7 percent by blend weight. Therefore, for the reasons stated hereinabove with regard to Claim 1 in response to first issue, Claim 8 is non-obvious under 35 U.S.C. 103(a).

With regard to the third issue, Claims 9-11 are non-obvious under 35 U.S.C. 103(a) for the reasons stated hereinbelow.

With regard to Claim 9, the instant invention, as mentioned hereinabove, discloses a diffusion membrane comprising: a microporous sheet comprising a blend of an aliphatic polyolefin and a thermoplastic olefin elastomer, the elastomer comprising less than 10 percent by blend weight, the polyolefin being selected from the group consisting of polyethylene, polypropylene, copolymers thereof, and blends thereof, the thermoplastic olefin elastomer being selected from the group consisting of ethylene-propylene rubbers, ethylene-propylene-diene terpolymer rubbers, and combinations thereof.

Therefore, for the reasons stated hereinabove with regard to Claim 1 in response to first issue, Claim 9 is non-obvious under 35 U.S.C. 103(a). Furthermore, Claims 10-11 are dependant from Claim 9; thus, Claims 10-11 are non-obvious under 35 U.S.C. 103(a).

d. CONCLUSION

In view of the forgoing comments, Claims 1-7, 8 and 9-11 are non-obvious under 35 U.S.C. 103(a); therefore, the Applicant

respectfully requests an early Notice of Allowance in the instant application.

Respectfully submitted,



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APPENDIX

1. A method of improving the mechanical strength of a membrane comprising the step of:

providing a microporous sheet comprising a blend of an aliphatic polyolefin and a thermoplastic olefin elastomer selected from the group of ethylene-propylene rubbers, ethylene-propylene-diene terpolymer rubbers, and combinations thereof with the elastomer comprising less than 10 percent by blend weight.

2. The method of Claim 1 wherein the elastomer comprises about 2 to 10 percent by blend weight.

3. The method of Claim 2 wherein the elastomer comprises about 3 to 7 percent by blend weight.

4. The method of Claim 1 wherein the microporous sheet has a Gurley air permeability less than 35 seconds/10cc.

5. The method of Claim 4 wherein the microporous sheet has a Gurley air permeability less than 25 seconds/10cc.

6. The method of Claim 1 wherein the polyolefins selected from polyethylene, polypropylene, copolymers thereof, and blends thereof.

7. The method of Claim 1 wherein the thermoplastic olefin elastomer is selected from the group of ethylene-propylene rubbers, ethylene-propylene-diene terpolymer rubber, and combinations thereof.

8. A method of improving the mechanical strength of a membrane comprising the step of:

providing a microporous sheet having a Gurley air permeability less than 35 seconds/10cc comprising a blend of an aliphatic polyolefin selected from the group consisting of polyethylene, polypropylene, copolymers thereof, and blends thereof, and a thermoplastic olefin elastomer being selected from the group consisting of ethylene-propylene rubbers, ethylene-propylene-diene terpolymer rubbers, and combinations thereof, with the elastomer comprising 3 to 7 percent by blend weight.

9. A diffusion membrane comprising:

a microporous sheet comprising a blend of an aliphatic polyolefin and a thermoplastic olefin elastomer, the elastomer comprising less than 10 percent by blend weight, the polyolefin being selected from the group consisting of polyethylene, polypropylene, copolymers thereof, and blends thereof, the thermoplastic olefin elastomer being selected from the group consisting of ethylene-propylene rubbers, ethylene-propylene-diene terpolymer rubbers, and combinations thereof.

10. The membrane of Claim 9 wherein the elastomer comprises between 2 and 10 percent by blend weight.

11. The membrane of Claim 10 wherein the elastomer comprises between 3 and 7 percent by blend weight.

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